

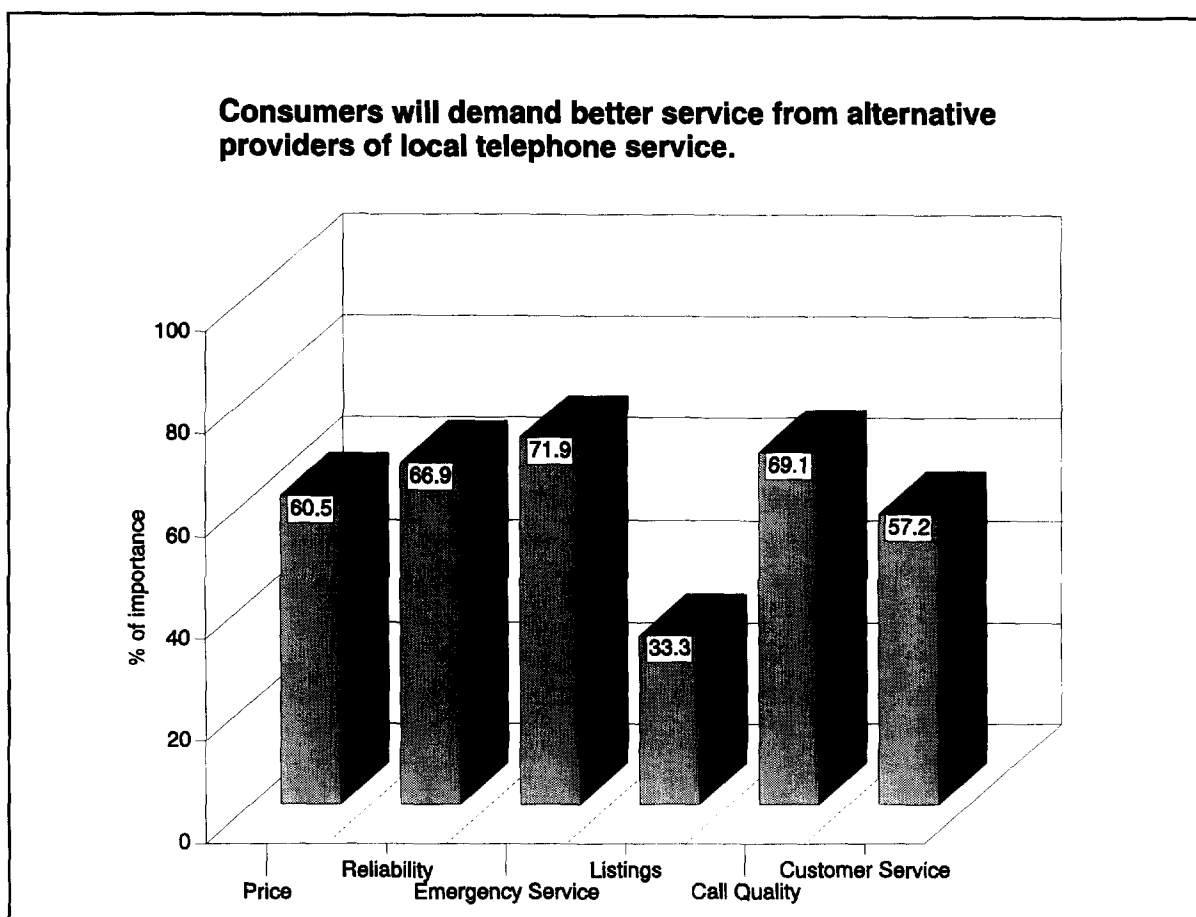
premises) not associated with switching long distance carriers, we would expect to see inertia among consumers in switching to a new local service provider.

#### **4.4 Importance of service features to consumers**

Finally, in an effort to gauge the types of hurdles that alternative local telephone service providers might face in competing against the incumbent local exchange carriers, we questioned consumers about the importance of certain service attributes to their future decisions to switch to an alternative service provider. The results of this questioning demonstrate that consumers are most concerned with overall service reliability and price. Figure 4.9 displays the results of this line of questioning.<sup>144</sup> For example, overall, 72% of the respondents felt that having a telephone “always available in emergencies” was very important, 60% cited price, 67% cited reliability, and 69% cited call quality. Additionally, those who consider switching companies expressed more concern with these service attributes than the overall sample.

---

144. The question read “How important are the following factors in your consideration of purchasing your local telephone service from your local cable company?...Using a scale from 1 to 5 where 5 means extremely important and one means not important at all, how important is that? ... Price ...Overall reliability of Service...” etc. This graph was calculated using those respondents who answered “extremely important.”



**Figure 4.9.** Importance of service features to consumers

## **4.5 Observations and conclusions**

Our consumer research and analysis confirms the incumbent local telephone company is well-positioned to retain the vast majority of its customer base despite the introduction of competitive alternatives in the future. Price incentives will be necessary in order to increase the number of people who would be willing to switch, and the cable companies (or any other alternative service providers such as future wireless carriers) in general will need to devote considerable time and energy to convince the consumer that they can provide less expensive, reliable and superior service. Advertising and marketing programs emphasizing these attributes, backed by adequate organizational resources, will be essential to persuade the customer that the alternative service provider can deliver reliable service at a lower overall price.

## **Appendix 4** | **CONSUMER DEMAND SURVEY QUESTIONNAIRE**

Appendix 4: Survey Questionnaire

Project #6783  
SPSS Format

Interviewer: Do Not Complete

Interviewing begins:

Hello, my name is \_\_\_\_\_ and I'm calling from  
First Market Research Corporation in Boston. We're  
conducting a short survey to help with the development  
of public policy related to communications and I'd like  
to speak to the adult in your household who is most  
familiar with your telephone bills. We can assure you  
that your answers to our questions will remain  
completely confidential. We can also assure you that  
we are not attempting to sell you anything or change  
your phone service.

\_\_\_\_ COL. 1 1 2 3 4 5 6 7 8 9 0  
\_\_\_\_ COL. 2 1 2 3 4 5 6 7 8 9 0  
\_\_\_\_ COL. 3 1 2 3 4 5 6 7 8 9 0  
\_\_\_\_ COL. 4 1 2 3 4 5 6 7 8 9 0  
\_\_\_\_ COL. 5 1 2 3 4 5 6 7 8 9 0

Interviewer: Complete

COL. 8 1 Male 2 Female

---

A. Do you or anyone in your family work for a  
telephone or a cable television company?

COL. 9 Skip To  
1 Yes \_\_\_\_\_ TERMINATE  
2 No \_\_\_\_\_ 1  
3 Don't Know/Refused \_\_\_\_\_ TERMINATE

---

#### Appendix 4: Survey Questionnaire

1. Most consumers have service from two telephone companies--one for local service and one for long distance service. A local company might be, for example, New York Telephone or Pacific Bell and a long distance company might be, for example, AT&T or MCI.

Could you please tell me the name of the company which provides your local telephone service?

(WRITE IN BELOW IF NOT PRECODED.)

COL. 10

1 Correct

Ameritech  
Bell Atlantic  
Bell South  
C & P (Chesapeake & Potomac)  
Cincinnati Bell  
Diamond State Tel.  
Illinois Bell  
Indiana Bell  
Michigan Bell  
Mountain States Bell  
Nevada Bell  
New England Tel.  
New Jersey Bell  
New York Tel.  
Northwestern Bell  
NYNEX  
Ohio Bell  
Pacific Bell  
Pacific Northwest Bell  
Rochester Tel.  
South Central Bell  
Southern Bell  
Southern New England Tel.(SNET)  
Southwestern Bell  
U.S. West  
Wisconsin Bell

2 Incorrect

3 Don't Know/Refused

2. Could you please tell me the name of the company which provides your long distance service?

(WRITE IN BELOW IF NOT PRECODED.)

COL. 11

1 AT&T, MCI, SPRINT

1 Correct

2 Incorrect

3 Don't Know/Refused

*Appendix 4: Survey Questionnaire*

3. Have you ever switched from one long distance telephone company to another?

COL. 12

Skip To

- 1 Yes \_\_\_\_\_ 4  
2 No \_\_\_\_\_ 5  
3 Don't Know/Refused \_\_\_\_\_

4. Have you switched from one long distance telephone company to another in the past year?

COL. 13

- 1 Yes  
2 No  
3 Don't Know/Refused

5. In a typical month, what is your household's bill for all telephone service? This includes both local and long distance service. (PROBE FOR BEST GUESS AND WRITE IN BELOW.)

COL. 14, 15, 16, 17

\$ \_\_\_\_\_

6. Overall, how satisfied are you as a result of your experiences with your local telephone company? Please use a scale of 1-5 where one means extremely dissatisfied and five means extremely satisfied.

COL. 18

- 5 Five (Extremely Satisfied)  
4 Four  
3 Three  
2 Two  
1 One (Extremely Dissatisfied)  
9 Don't Know

7. Overall, how satisfied are you as a result of your experiences with your long distance telephone company? Please use a scale of 1-5 where one means extremely dissatisfied and five means extremely satisfied.

COL. 19

- 5 Five (Extremely Satisfied)  
4 Four  
3 Three  
2 Two  
1 One (Extremely Dissatisfied)  
9 Don't Know

## Appendix 4: Survey Questionnaire

8. Now I'd like you to tell me how satisfied or dissatisfied you are with each of the following specific aspects of your local telephone company. First take...(READ FIRST ITEM). How would you rate your local telephone company on that, using a scale of 1 to 5 where one means extremely dissatisfied and five means extremely satisfied? Next take...(REPEAT QUESTION FOR EACH ITEM).

	<u>Five</u>	<u>Four</u>	<u>Three</u>	<u>Two</u>	<u>One</u>	<u>Don't Know</u>	<u>COL</u>
Monthly charges	5	4	3	2	1	9	<del>20</del>
Overall reliability of service	5	4	3	2	1	9	<del>21</del>
Prompt response to problems	5	4	3	2	1	9	<del>22</del>
Good value for the money	5	4	3	2	1	9	<del>23</del>
Clarity of the bill	5	4	3	2	1	9	<del>24</del>
Doing things right the first time, such as repairs, service, etc.	5	4	3	2	1	9	<del>25</del>
Treats you as a valued customer	5	4	3	2	1	9	<del>26</del>
Ease of reaching someone in customer service	5	4	3	2	1	9	<del>27</del>

9. Does your household have cable television service?

COL. 28 Skip To  
 1 Yes 10  
 2 No 13  
 3 Don't Know/Refused

10. In a typical month, what is your household's bill for all cable television services? This includes all services and any equipment rental charges. (PROBE FOR BEST GUESS AND WRITE IN BELOW.)

COL. 29, 30, 31, 32

\$ \_\_\_\_\_

11. Overall, how satisfied are you as a result of your experiences with your cable television company? Please use a scale of 1-5 where one means extremely dissatisfied and five means extremely satisfied.

COL. 33  
 5 Five (Extremely Satisfied)  
 4 Four  
 3 Three  
 2 Two  
 1 One (Extremely Dissatisfied)  
 9 Don't Know

# Appendix 4: Survey Questionnaire

12. Now I'd like you to tell me how satisfied or dissatisfied you are with each of the following specific aspects of your cable television company. First take...(READ FIRST ITEM). How would you rate your cable TV company on that, using a scale of 1 to 5 where one means extremely dissatisfied and five means extremely satisfied? Next take...(REPEAT QUESTION FOR EACH ITEM).

	<u>Five</u>	<u>Four</u>	<u>Three</u>	<u>Two</u>	<u>One</u>	<u>Don't Know</u>	<u>COL</u>
Monthly charges	5	4	3	2	1	9	34
Overall reliability of service	5	4	3	2	1	9	35
Prompt response to problems	5	4	3	2	1	9	36
Good value for the money	5	4	3	2	1	9	37
Clarity of the bill	5	4	3	2	1	9	38
Doing things right the first time, such as repairs, service, etc.	5	4	3	2	1	9	39
Treats you as a valued customer	5	4	3	2	1	9	40
Ease of reaching someone in customer service	5	4	3	2	1	9	41

13. As you may know, cellular phones allow you to make calls from your car or while you are away from home.

Do you or anyone in your household use any cellular phones?

COL. 42 Skip To  
 1 Yes \_\_\_\_\_ 14  
 2 No \_\_\_\_\_ 16  
 3 Don't Know/Refused \_\_\_\_\_ 16

14. In a typical month, what is your household's bill for cellular phone service? (PROBE FOR BEST GUESS AND WRITE IN BELOW.)

COL. 43, 44, 45, 46

\$ \_\_\_\_\_

15. Overall, how satisfied are you as a result of your experiences with your cellular phones? Please use a scale of 1-5 where one means extremely dissatisfied and five means extremely satisfied.

COL. 47  
 5 Five (Extremely Satisfied)  
 4 Four  
 3 Three  
 2 Two  
 1 One (Extremely Dissatisfied)  
 9 Don't Know



#### Appendix 4: Survey Questionnaire

16. In the future, new technologies could allow you to have phones that don't connect to the telephone wires that come into your house. These would be similar to cordless phones but they would allow you to make calls from your car or from the grocery store or the local park or anywhere.

If a company were to offer local phone service that used this new wireless technology at the same price that you pay now, would you definitely, probably, probably not or definitely not consider purchasing your local telephone service from this company?

COL. 48

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not
- 5 Don't Know/Refused

- 
17. If a company were to offer local phone service that used this new wireless technology and could give you a 10% reduction in your monthly bill for local telephone service, would you definitely, probably, probably not or definitely not consider purchasing your local telephone service from this company?

COL. 49

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not
- 5 Don't Know/Refused

- 
18. At the present time, households receive their local telephone service through their local telephone company and they receive their cable TV service through their local cable company. In the future, it may be possible for the same company to provide both local telephone and cable services, as well as additional interactive services.

Would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from a company able to provide both local phone and cable TV service?

COL. 50

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not
- 5 Don't Know/Refused
- 6 Don't Have Or Want Cable

- 
19. What if the company providing both local telephone and cable services were your cable television company? Would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable television company?

COL. 51

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not Consider
- 5 Don't Know/Refused

# Appendix 4: Survey Questionnaire

20. Can you tell me in your own words what factors would influence you to consider purchasing local telephone service from your cable television company? (PROBE FOR SPECIFICS.)	COL. <u>52</u>	COL. <u>53</u>
	1	1
	2	2
	3	3
	4	4
	5	5
	6	6
	7	7
	8	8
	9	9
	0	0

21. How important are the following factors in your consideration of purchasing your local telephone service from your local cable television company? First take...(READ FIRST ITEM). Using a scale of 1 to 5 where five means extremely important and one means not important at all, how important is that? Next take...(REPEAT QUESTION FOR EACH ITEM.)

	Five	Four	Three	Two	One	Don't Know	COL
Price	5	4	3	2	1	9	55
Overall reliability of service	5	4	3	2	1	9	55
Always available in emergencies	5	4	3	2	1	9	56
How easy it is for someone to find your phone number	5	4	3	2	1	9	57
Clarity of phone calls	5	4	3	2	1	9	58
Availability of other services	5	4	3	2	1	9	59
Combined bill for cable television and phone	5	4	3	2	1	9	60
Ease of reaching someone in customer service	5	4	3	2	1	9	61

22. Suppose the local cable television company could give you a 10% reduction in your monthly bill for telephone service.

Then, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable television company?	COL. <u>62</u>	Skip To
1 Definitely	24	
2 Probably		
3 Probably Not		
4 Definitely Not		
5 Don't Know/Refused	23	

#### Appendix 4: Survey Questionnaire

23. Suppose the local cable television company could give you a 20% reduction in your monthly bill for local telephone service.

Then, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable TV company?

COL. 63 Skip To

1 Definitely	24
2 Probably	
3 Probably Not	
4 Definitely Not	28
5 Don't Know/Refused	24

24. Now, suppose you had to change your telephone number in order to obtain local phone service from your cable TV company.

If you could get the same level of service you get now but with a 10% reduction in your monthly bill for local telephone service, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable TV company?

COL. 64 Skip To

1 Definitely	26
2 Probably	
3 Probably Not	25
4 Definitely Not	
5 Don't Know/Refused	

25. Again, suppose you had to change your telephone number in order to obtain local phone service from your cable TV company.

If you could get the same level of service you get now but with a 20% reduction in your monthly bill for local telephone service, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable TV company?

COL. 65

1 Definitely	
2 Probably	
3 Probably Not	
4 Definitely Not	
5 Don't Know/Refused	

26. Now, suppose you could not be sure your telephone number would be listed in the phone directory and information services of the local telephone company if you obtained your local phone service from your cable TV company.

If you could get the same level of service you get now but with a 10% reduction in your monthly bill for local telephone service, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable TV company?

COL. 66 Skip To

1 Definitely	28
2 Probably	
3 Probably Not	27
4 Definitely Not	
5 Don't Know/Refused	

## Appendix 4: Survey Questionnaire

27. Again, suppose you could not be sure your telephone number would be listed in the phone directory and information services of the local telephone company if you obtained your local phone service from your cable TV company.

If you could get the same level of service you get now but with a 20% reduction in your monthly bill for local telephone service, would you definitely, probably, probably not, or definitely not consider purchasing your local telephone service from your cable TV company?

COL. 67

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not
- 5 Don't Know/Refused

28. Suppose your local telephone company could provide both local telephone and cable services at prices comparable to what you pay now for the two services.

Would definitely, probably, probably not, or definitely not consider purchasing your cable TV service and your local telephone service from your local telephone company?

COL. 68

- 1 Definitely
- 2 Probably
- 3 Probably Not
- 4 Definitely Not
- 5 Don't Know/Refused
- 6 Don't Have Or Want Cable

29. Now I'm going to read a list of services that a single company providing both your cable TV and local telephone services might offer and I'd like to know how desirable each would be. First take (READ FIRST ITEM). Is this service very desirable, fairly desirable, not very desirable, or not at all desirable? Next take...((REPEAT QUESTION FOR EACH ITEM.))

	Very Desirable	Fairly Desirable	Not Very Desirable	Not At All Desirable	Don't Know	COL.
a. Being able to call up and order any movie and watch it immediately on your TV	1	2	3	4	5	69
b. Being able to conduct your banking by phone	1	2	3	4	5	70
c. Being able to take classes by using your TV and your telephone	1	2	3	4	5	71
d. Being able to play computer games on your TV screen	1	2	3	4	5	72
e. Being able to shop through your TV by viewing products in full detail and making immediate purchases	1	2	3	4	5	73
f. Being able to receive medical advice and consultations through your TV and phone	1	2	3	4	5	74
g. Being able to see callers over your TV screen and to be seen by the people you call	1	2	3	4	5	75

## Appendix 4: Survey Questionnaire

Now I have a few questions for background purposes only.

30. Into which of the following categories does your own age fall? COL. 76 (READ)
- 1 18-24
  - 2 25-34
  - 3 35-44
  - 4 45-54
  - 5 55-64
  - 6 65 And Over
- (DO NOT READ)
- 7 Don't Know/Refused

31. Does your household have: (READ LIST.)

	Yes	No	Don't Know	COL
a. A fax machine	1	2	3	77
b. A personal computer	1	2	3	78
c. A modem	1	2	3	79
d. An interactive on-line information system such as Prodigy, CompuServe, or Internet	1	2	3	80
e. An answering machine	1	2	3	81
f. A video game system	1	2	3	82

32. Including yourself, how many people 18 years of age or older live in your household? COL. 10
- 1 One
  - 2 Two
  - 3 Three
  - 4 Four
  - 5 Five
  - 6 Six Or More
  - 7 Don't Know/Refused

33. Do any children under 18 years of age live in your household? COL. 11
- 1 Yes
  - 2 No
  - 3 Don't Know/Refused

*Appendix 4: Survey Questionnaire*

34. How many different telephone numbers do you have in your home? (WRITE IN NUMBER BELOW.) COL. 12, 13, 14
- 

- 
35. Which of the following services do you currently have? (READ LIST. CIRCLE IF YES.) COL. 15, 16, 17, 18, 19, 20
- 1 Call Waiting
  - 2 Call Forwarding
  - 3 3-Way Calling
  - 4 Voice Messaging Or Voice Mail
  - 5 Touch-Tone Service
  - 6 Distinctive Ring
- 

36. What is the last grade you completed in school? COL. 21
- 1 Some High School
  - 2 High School Graduate
  - 3 Some College Or Technical
  - 4 College Graduate
  - 5 Graduate School/Advanced Degree
  - 6 Don't Know/Refused
- 

37. And finally, into which of the following categories did your total household income fall in 1992? COL. 22 (READ)
- 1 Under \$10,000
  - 2 \$10,000-\$24,999
  - 3 \$25,000-\$34,999
  - 4 \$35,000- \$49,999
  - 5 \$50,000-\$74,999
  - 6 75,000 And Over
- (DO NOT READ)
- 7 Don't Know/Refused
-

*Appendix 4: Survey Questionnaire*

And now, for validation purposes only, may I please have your...

First Name \_\_\_\_\_

City/Town, State \_\_\_\_\_

Telephone (with Area Code) (\_\_\_\_\_) \_\_\_\_\_

Thank you for your time.

Interviewer's Signature \_\_\_\_\_ Date \_\_\_\_\_

INTERVIEWER: FILL IN BELOW -- AREA CODE AND TELEPHONE EXCHANGE

\_\_\_\_\_ - \_\_\_\_\_

COL. 23 COL. 24 COL. 25 COL. 26 COL. 27 COL. 28

# 5

## COMPETITIVE PROVISION OF ALTERNATIVE LOCAL SERVICES: A BUSINESS CASE ANALYSIS

There is a widespread perception that cable television operators and wireless telecommunications services providers can easily enter the local telephone service business at a cost level that will be competitive with the incumbent local exchange carriers (LECs). For example, in a 1992 article in *Forbes*, George Gilder makes the case for a scenario in which “[y]our phone bill next month bears the name not of the local phone company but of your local cable company.”<sup>145</sup> The same kind of optimism can be found in discussions of “wireless” and “Personal Communications Services” (PCS) technology.<sup>146</sup> This is typical of press treatment of the “information highway” as well as the optimistic pronouncements by equipment vendors, by companies planning technically-oriented pilot projects, and by securities analysts. In the end, entry and ultimate success (or failure) of such competing ventures will be driven by the fundamental economics of the local telephone business: Will the potential revenues available to the new entrants exceed the investment and operational costs that they must confront in order to compete viably with the entrenched local exchange telephone companies?

The objective of this chapter is to present a detailed “business case” economic analysis of the real costs of cable television and wireless entry into telephony. We perform this analysis by first constructing a financial model that captures the *incremental investment costs* as developed in the technical analysis (Chapter 3) along with the various market development and operational requirements suggested by the survey results (Chapter 4). The model then calculates the net present value of the cash flow associated with various alternative entry, demand and performance scenarios.

With these results, we can project the likelihood of success under the various sets of conditions, and thereby make an assessment as to the potential ability of such entrants to present a level of competition to the BOCs sufficient to constrain their market power in the local exchange. From this analysis, we can determine the extent to which the cable or wireless companies can viably offer local telephone service at a cost comparable to the cost

---

145. Gilder, G., “Cable’s Secret Weapon,” *Forbes*, April 13, 1992, 80-84 at 80. Also see, e.g., Huber, P., M. Kellogg, and J. Thorne, *The Geodesic Network II: 1993 Report on Competition in the Telephone Industry*, Washington, D.C., The Geodesic Company, 1992, at 2.54.

146. See, e.g., McGarty, T., “Wireless Access to the Local Loop,” (March 1993) and Glowacz, D., “Cutting the Cord”, *In Perspective*, Fall 1993, at 12-18.



and rate structure of the current market incumbents – the local exchange carriers (LECs). In addition, it will provide valuable information about the extent and timing of such entry, and thus offer an objective, empirical framework for the analysis of proposals to change the current regulatory structure.<sup>147</sup>

## 5.1 The “business case” models

We use a standard capital budgeting model based upon the discounted cash flow methods that are commonly used in business plan analysis.<sup>148</sup> The models provide estimates of the net present value (NPV) of alternative realistic business outcomes. By applying different assumptions in a series of alternative scenarios, these models are used to provide estimates of the financial risks and opportunities that cable television and wireless operators face as they attempt to enter the local telephone service business.

The capital investment components of the financial models are based on the cable and wireless network architectures detailed in Chapter 3. We then take those capital acquisition costs and develop fixed and variable (per-unit) investment costs for the various scenarios. These are then combined with ongoing operating costs (marketing, sales, customer service, maintenance, interconnection, and depreciation expenses) in a formal “business case” capital budgeting plan.

The result of this process is an estimate of the net present value of the decision to enter the local telephone service business.<sup>149</sup> If the net present value is positive (at the project’s cost of capital), then it represents a potentially successful financial venture; if the

---

147. Examples of such proposals are the bills introduced by Representatives Brooks and Dingell (H.R. 3626), and that introduced by Representatives Markey and Fields (H.R. 3636).

148. See, e.g., Brigham, E., *Fundamentals of Financial Management, Sixth Edition*, New York: The Dryden Press, 1992 and Brealey, R. and S. Myers, *Principles of Corporate Finance, Fourth Edition*, New York: McGraw Hill, 1991.

149. The process here is similar to so-called “Long Run Service Incremental Cost” (LRSIC) analyses frequently undertaken by local exchange carriers in support of their own entry decisions. Such a technique was, for example, utilized by Pacific Bell recently. On December 20, 1993, Pacific Bell filed four essentially identical applications with the FCC for Section 214 authorization to construct facilities for the provision of “Video Dial Tone” (“VDT”) service in each of four specific areas of California: Orange County, San Francisco Bay, Los Angeles and San Diego. *FCC Public Notice*, No. D-730, January 12, 1994 W-P-C-6913-16. The method is used in Exhibit E of each of these applications. Unlike the Pacific Bell LRSIC model, in which large quantities of as-yet unincurred capital costs are treated as “sunk” on the (dubious) grounds that they would be incurred by the utility even if it did not enter the video dial tone business, our models seek to identify all relevant future costs that would be required to support the establishment, by a cable television or wireless provider, of a viable and competitive local telephone service business.

net present value is negative, however, it does not. Thus, our approach is distinctly superior to other studies which simply report that a company's entry into telephony will require, for example, capital expenditures of \$500 to \$800 per subscriber.<sup>150</sup> Such studies seek to forecast immediate, low-cost entry merely because the per-unit cost of the *initial* capital investment appears to be within reach of multiple incumbents. However, initial capital expenditures represent only one element of cost. Our approach, by contrast, embraces the total cost of the operation in a multi-year context, including depreciation and cost of capital components, as well as ongoing out-of-pocket operating expenses. The analytical technique applied here thus represents the financial discipline of the income/expense statement and balance sheet, as opposed to the engineer's list of capital expenditures.

## 5.2 Network architectures

The technologies utilized and the associated costs are described in detail in Chapter 3. The objective of this chapter is to take those capital costs and construct a complete "business case" for entry by cable and wireless operators. A stylized overview of the general cable operator architecture is shown in Figure 5.1.

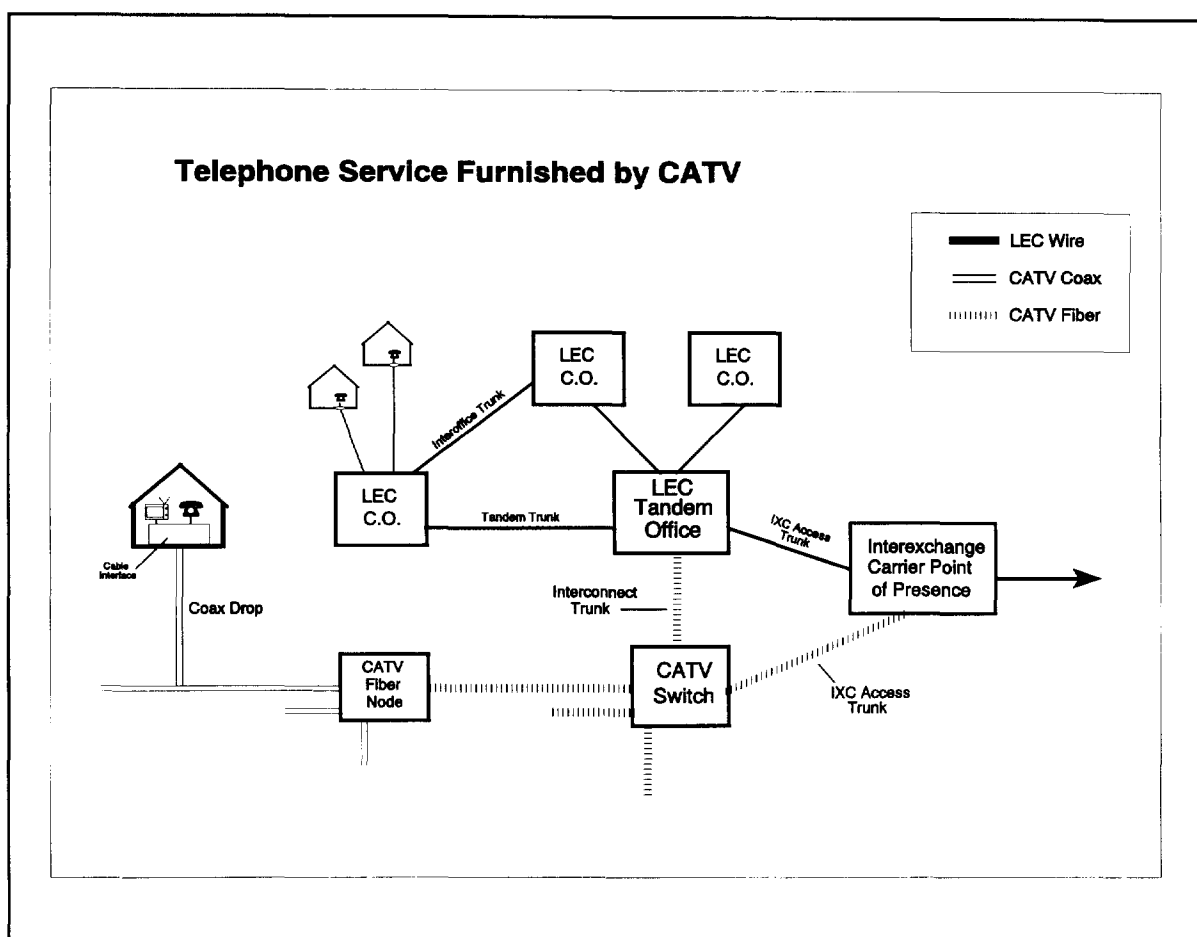
With respect to cable television systems, the model assumes a baseline coaxial distribution system designed primarily for one-way delivery of video signals from the "head end" to subscribers. The "incremental capital cost" of voice telephony consists of the costs of the subscriber unit at the customer premises, a telephony interface at the headend, and the allocated cost of the fiber and coaxial spectrum.<sup>151</sup> It is clear that the baseline cable video distribution service is supported by an organization and other resources that, as discussed below, are not adequate to also support a competitive voice telephone service business. Accordingly, the incremental operating costs consist of those elements that would not be present in a video-only business framework.

The overview of the wireless/PCS architecture is shown in Figure 5.2. The baseline wireless service network has been engineered with capacity sufficient to satisfy the needs of a typical population of *mobile* subscribers. As noted in Chapter 3, the typical busy hour demand per mobile unit (cellular or PCS) is considerably lower than that for fixed (i.e., landline) services. In our model, we assume wireless as a full *replacement* for wired

---

150. Further information is provided in Chapter 3. See also Reed, D., Federal Communications Commission, "The Prospects for Competition in the Subscriber Loop: The Fiber-to-the-Neighborhood Approach," presented to the 21st Annual Telecommunications Research Policy Council, September, 1993. Reed provides an elaborate "engineering" analysis of the capital costs of entry, but does not extend the study beyond the initial capital outlay. Reed's \$1100 figure is higher than other industry figures because it includes switched video as well.

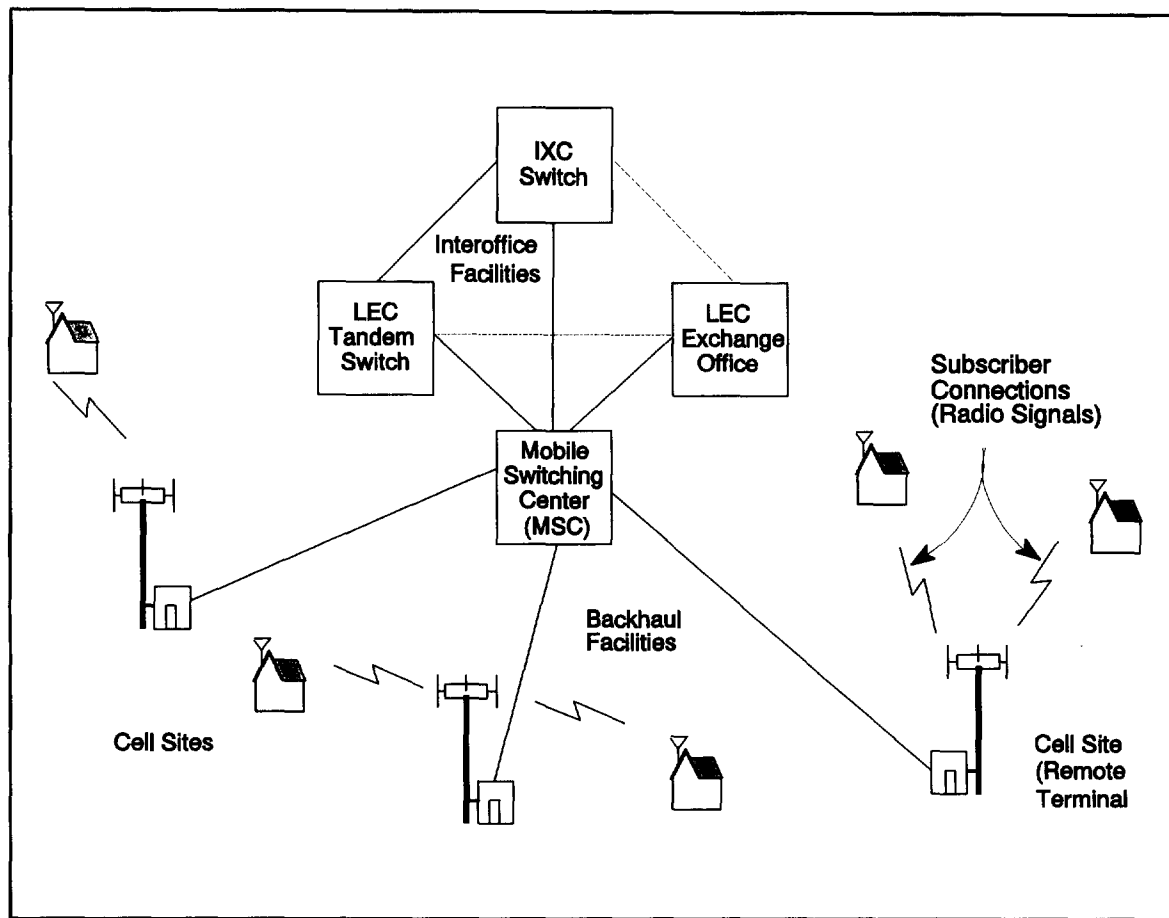
151. See the details presented in Chapter 3.



**Figure 5.1.** Local Telephone Service Provided by a Cable Television Operator

landline services; hence, it was necessary to construct transmission and switching plant with sufficient capacity to support the same level of usage that would be expected from fixed voice telephone services.

These architectures represent the two most promising alternative technologies for conventional voice telephony that are currently under development and deployment; however, their evolution will be strongly shaped by economic and regulatory forces that may or may not lead to realization of their technological promise. Furthermore, the key method for analysis of the success of each such technology is the marketplace — the willingness of buyers to purchase the services offered, and the financial willingness and ability of suppliers to construct and implement designs embodying these alternative delivery systems. The financial discipline of a business case construct, as used in this chapter, is intended to simulate that demand/supply interaction.



**Figure 5.2.** Cellular/PCS System Architecture

### **5.3 Marketing, customer service, and interconnection expenses**

Capital costs for our business case are provided directly from the discussion of alternative technologies in Chapter 3, for each of the cable television and wireless entry scenarios.<sup>152</sup> In Chapter 4, we reviewed the results of the extensive consumer survey that we undertook to determine consumer interest in and attitudes toward alternative suppliers of local telephone service. That survey indicated that substantial organizational resources, marketing and sales efforts, and other additional expenses will need to be incurred by an

---

152. The values used are shown in Table 3 of Chapter 3. For cable, the initial build value per subscriber is \$160 with a variable capital expenditure of \$585 when a subscriber begins service. The total per subscriber is thus \$745. For PCS, the initial build value per subscriber is \$70 with a variable capital expenditure of \$960 when a subscriber begins service. The total is thus \$1,030 per subscriber. A ten percent overbuild assumption is built into the capital costs for the initial capital build out; that is, in order to satisfy demand for 100 customers, the provider must build for 110 customers.

existing cable television operator in order to achieve a sufficient level of consumer confidence. Among other things, the survey results suggest that:

- Although there is some interest in alternative local telephone service providers, a significant price differential between LEC and non-LEC local telephone service will be required in order to induce customers to switch carriers.
- Customers do not view their cable company as providing the same level of service or reliability as that from their local telephone company. Hence, significant numbers of additional personnel will be needed by a cable operator in order to accommodate those customer expectations and remain competitive with the incumbent LEC.
- If a phone number change is required and/or there is no well defined directory listing for the alternative provider, there is a significant reduction in potential demand. Thus cable (and wireless) operators will have to spend additional resources to solve these kinds of problems.

Thus, the survey implies that alternative providers will have to incur significant marketing, customer service and technical expenses in order to attract and retain subscribers. In this section, we estimate the marketing and customer service expenses that would be required for viable entry into local service telephony in competition with the LECs.

In order to estimate realistic expenses for these categories, we first examine the actual data from the companies that are already engaged in the local voice telephone business — i.e., the LECs. Public data for the 54 largest local exchange companies was assembled.<sup>153</sup> The LECs in that publication range in size from Citizens Telephone Utility Company in California, with 76,235 access lines, to Bell South, with 19.2 million access lines. According to the Uniform System of Accounts (which provides the basis for the FCC data compilation), marketing expenses are defined as Product Management (“Costs incurred in performing administrative activities relating to marketing products and services”) plus Sales Expenses (“Costs incurred in selling products and services such as customer sales proposals”) plus Product Advertising (“Costs incurred in developing and implementing promotional strategies to stimulate the purchase of products and services”).<sup>154</sup> Customer service expenses are defined as those including call completion services, number and directory maintenance, initiating customer service orders, maintaining

---

153. The data for the year ended December 31, 1992 was obtained primarily from the Federal Communications Commission's annual publication, *Statistics of Communications Common Carriers, 1992/1993 Edition*, (“SOCC”), Industry Analysis Division, Federal Communications Commission, U.S. Government Printing Office, 1993.

154. 47 CFR Part 32 (Uniform System of Accounts - Revised), § 32.6610 through § 32.6613. This does not include corporate overhead expenses.

and billing customer accounts, and instructing customers in the use of products and services.<sup>155</sup>

Our analysis of 1992 data for 54 local exchange carrier telephone companies shows annual marketing expenses of \$19 per access line and customer service expenses of \$63 per access line.<sup>156</sup> We originally thought that these costs would exhibit some economies of scale — that is, that the cost per line would decline as the size of the telephone company increased. However, extensive statistical and economic modeling caused this hypothesis to be rejected. We used regression analysis to test the hypothesis that there were economies of scale in marketing and separately in customer service in the sample of 54 LECs in the FCC database. In all cases, we found that these costs, on a per subscriber basis, did not exhibit any significant declines for the larger systems. Most LECs have achieved near universal penetration rates, such that for any given LEC, the aggregate size of its market is approximately equal to the aggregate size of its customer base. Marketing costs (which include media advertising and direct mail) are generally more closely related with overall market size than with customer base. For example, the price for an advertisement in a local newspaper or on a local television station is a function of the “reach” of the medium (i.e., the size of its market) rather than of the number of customers served by the advertiser. Accordingly, marketing costs are based upon overall market size.

Sales costs, on the other hand, are primarily a function of units added during a given period of time (e.g., a year). Units added consists of net additional units in service plus annual churn. Such costs could be substantial, since the new entrant is necessarily selling against a long-time incumbent with near universal market presence. The cellular telephone industry has found it necessary to incur extremely high sales costs in order to induce new customers to take cellular service. These costs have included heavily discounted or even “free” cellular mobile telephone units, agent commissions, and a variety of other promotional devices. Industry sources have estimated the overall sales and marketing costs at approximately \$900 per new cellular customer added.

It is also likely that, once entry of a competing voice dial tone line provider has occurred, both the new entrant and the incumbent LEC will expand their respective sales and customer support functions. For example, while most LECs provide sales, bill inquiry, and other customer support functions only during limited business hours, the three largest interexchange carriers currently offer full 24-hour, seven-days-a-week coverage. Further, the incumbent LEC currently has no need to engage in affirmative sales programs such as telemarketing and special promotions with respect to local voice telephony. The

---

155. 47 CFR Part 32 (Uniform System of Accounts - Revised), § 32.6620 through § 32.6623.

156. Based on Tables 2.9 and 2.10 of FCC, *Statistics of Communications Common Carriers, 1992/1993 Edition*.

new entrant will clearly need to pursue a marketing program that includes these sales strategies.<sup>157</sup>

The \$19 per LEC subscriber line marketing expense (from the FCC *Statistics of Communications Common Carrier* database) is scaled back by 50% due to the composition of expenses, some of which are a function of number of subscribers and others which depend on total market size.<sup>158</sup> This latter effect reflects the fact that most advertising programs such as television, telemarketing, and print would be directed at the entire market and not just at current subscribers. Furthermore, the time profile of marketing would call for extensive expenditures in early years, leveling off after potential subscribers have become more aware of the alternative service in the later years.<sup>159</sup> Marketing costs are thus estimated at \$9.50 per *household* (not per subscriber) in the potential market. Given the experience of both cable television and cellular, these costs are, if anything, on the conservative side.

As confirmed by the responses to the survey conducted in Chapter 4, where some 46% of the respondents who had cable TV were not satisfied with the level of reliability and service,<sup>160</sup> we believe that cable operator customer service will have to improve significantly in order to retain current cable customers and expand into telephony. Thus, the reasonable value to use in the business case is the LEC value of \$63 reported above.<sup>161</sup>

Finally, as discussed in Chapter 2, in order for cable operators or other alternative local telephone service providers to offer a telephone service that would be competitive with incumbent LEC offerings, it will be essential for the new entrant to interconnect its system with the LEC network, and (as a practical matter) to hand off most calls to the LEC

---

157. For example, special customer premises equipment ("CPE") will be required in order for a customer to use cable / PCS telephony services. To be competitive, it is likely that the new entrants will be forced to supply "free" CPE.

158. A more complex business case would further differentiate between business and residential access lines and thus provide a direct link to the number of subscribers in our analysis. Our analysis represents a conservative estimate of marketing costs that the new entrant would incur.

159. In metropolitan areas where cable entry into telephony is most likely, cable operator marketing expenses are typically much higher — in the range of \$20 to \$30 dollars per subscriber per year. This gives an even more expensive view of the kinds of expenses that a new market entrant will incur in order to draw business away from the LECs.

160. A more detailed analysis of the survey results is provided in Chapter 4.

161. Given the nature of local telephone service, it appears that there would be limited economies of scope between cable and telephony for customer service functions; thus these expenses would be *in addition to* those for the current cable TV customer service personnel and expenses.

for completion to a LEC subscriber. Moreover, since the vast majority of telephone users in the market will continue to take their service from the LEC, most incoming calls placed to subscribers to the alternative service will originate on the LEC's network.

There is not at this time any definitive resolution of the matter of interconnection costs. Several different models are possible.<sup>162</sup> A "worst case" solution (from the perspective of the alternative provider) is the requirement that the non-LEC carrier pay switched access charges to the LEC on essentially the same basis as applies for interexchange carriers — i.e., for all originating and terminating access minutes of use. The "best case" scenario is some form of "co-carrier" arrangement whereby each connecting carrier (the LEC and the new entrant) completes calls originated by the other's subscribers on a non-revenue basis.<sup>163</sup> We have assumed a limited reciprocal co-carrier agreement, with a 1 cent per minute net transport cost.<sup>164</sup>

## **5.4 Demand and Revenue Assumptions**

The business case requires forecasts of potential revenue from the alternative local telephone service. In order to estimate aggregate revenue and revenue growth, it is necessary to project both the per-subscriber revenue level as well as the total number of subscribers during each successive year of the service's operation.

---

162. This issue is not even close to resolution. First, the FCC's "Expanded Interconnection" NPRM (Expanded Interconnection with Local Telephone Company Facilities, *Report and Order and Notice of Proposed Rulemaking*, CC Docket No. 91-141, October 19, 1992) has barely scratched the surface of switched services interconnection. While a comprehensive FCC access charge reform proceeding appears likely in the not too distant future, as of this writing no such docket has been initiated. More to the point, the provision of *local* telephone services and interconnections with the incumbent LEC is fundamentally a matter for *state-level* jurisdiction. Accordingly, before an alternative carrier can enter the local telephone market and interconnect with the incumbent LEC, the state regulatory authority must first issue a Certificate of Public Convenience and Necessity (CPCN) or its equivalent to the new entrant, and establish the interconnection and access charge arrangements that govern the interrelationship between alternative providers and the LEC. None of that is likely to occur anytime soon.

163. See, e.g., Curran, P., New York Public Service Commission, *Market Structure — A Plan for the Transition to Local Competition*, Albany, New York, March 22, 1993.

164. Our assumed interconnection cost per subscriber per month declines as penetration increases; it is represented as:  $(1 - n) \text{ times } 810 \text{ minutes times } \$0.01$ , where  $n$  is the penetration share. At a penetration of 2%, the monthly cost is \$7.94; at a penetration of 20%, monthly cost is \$6.48.



Our starting point for the average monthly revenue per subscriber is a basic local service bill of \$20.<sup>165</sup> This we discount by 20% in the early years based on our survey results with the differential from LEC prices gradually disappearing over the 15 year horizon of our analysis. To the discounted local service price, we add an estimated \$15 in access and other revenue.<sup>166</sup> Thus the basic scenario starts in year 1 with a \$31 price gradually increasing to \$35 at the end of the 15 year horizon.<sup>167</sup> At the 20% discount, the survey discussed in Chapter 4 indicated that anywhere between 36% and 16% would "definitely consider" switching to an alternative carrier; the range depends on the outcomes of such issues as directory listings and number changes. We adopt a base case ultimate penetration of 18% here; it represents the fact that not all respondents who said that they would consider switching would actually switch when offered the opportunity. On the other hand, some respondents who would not now consider it, might be persuaded by marketing campaigns and the favorable experiences of friends and relatives. Thus, we take a midpoint view of 18% penetration which follows the characteristic growth pattern of low rates of increase in the early years accelerating in the mid-years of our 15 year period, and leveling off at the equilibrium level for the new entrant.

As discussed above, we calculate the estimates under a variety of different assumptions. In contrast to our base case revenue described above, our most optimistic scenario assumes that average price is composed of the (discounted) \$20 component discussed above, plus an additional \$30 composed of access revenues and other as yet unspecified ancillary services. Thus this figure grows from \$46 in year 1 to \$50 in year 15. The optimistic scenario reflects directly the survey result that some 30% would definitely consider switching<sup>168</sup> Thus we allow for the possibility that one alternative

---

165. See, e.g., FCC, *Statistics of Communications Common Carriers, 1992/1993 Edition*, at 308, which shows an average monthly residential rate of \$18.64 for 1991. To this we add a small amount for optional calling services such as call waiting and three way calling.

166. The actual amount of access and other revenue will depend on a variety of uncertain factors such as how much traffic is actually switched directly to the interexchange carrier's point of presence; the future evolution of the access charge rate structure; and the revenue for access to intraLATA toll. Our \$15 assumption represents a base case assumption; more optimistic possibilities are considered later in this section.

167. See, e.g., Affidavit of Howard A. Neckowitz, October 15, 1993, Motion of Ameritech to Remove Permanently the Decree's Interexchange Restriction, *U.S. v. Western Electric Company and American Telephone and Telegraph Co., et. al.*, No. 82-0192, U. S. District Court of District of Columbia. That document shows average revenues in the same range as ours.

168. The optimistic scenario also includes a general increase in services to business although previous research indicates that name brand is a very important factor for business choice of alternative telephone service and equipment providers. See, e.g., Roddy, D. and R. Mayer, *Consumer Interest in New Communication, Information, and Entertainment Services*, Economics and Technology, Inc. and Theodore Barry and Associates, November 1992, prepared for the New York Public Service Commission Staff and filed in New York Case 91-C-0485, (continued...)